

SOME COMPETENCIES USED BY INSTITUTIONAL RESEARCHERS
IN COMMUNITY JUNIOR COLLEGES: A NATIONAL STUDY

By

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The objective of the study was to delineate specific competencies that researchers presently employed used most often in the performance of their job at their particular community junior college.

This study was necessary for two reasons. The first reason is based on the growing demand for research to be conducted in the community junior college as a result of the growth of the colleges themselves and public demand for the college to become accountable. The second reason is based on the quality of research as indicated by the small percent of research reports that are of publishable quality. These research reports proposed to be published are not published

because of "faulty design, poor methodology, ungeneralizable findings, or just poor quality of reproduction" (Roueche and Boggs, 1968, p. 35). This would indicate a lack of adequate preparation or uncertainty as to what specific competencies an institutional researcher in community junior colleges ought to have in order to perform the job.

The term competency was defined in this study as the capability to engage in specific skills and knowledge necessary for the completion of a specific activity. Two samples were taken from the 1973 Community and Junior College Directory. The sampling technique used was the stratified random sample where the strata were based on whether the college was operated publicly or independently and on enrollment size. The first sample of institutional researchers developed the list of competencies used most often on the job. This list was clarified by the first sample and then distributed to the second sample of institutional researchers to determine whether or not the ranking of the list was similar for fulltime and parttime researchers, researchers working in a publicly operated or an independently operated college and researchers from different enrollment sized colleges. The rankings for each set of researchers were based on medians and interquartile ranges and were analyzed using Kendall's Coefficient of Concordance. There were no significant differences in the rankings. Thus it was concluded that all sets of researchers use a common and/or basic set of competencies.

The competency rankings indicated that the general categories of communication, knowledge about one's own college, and a general knowledge of community college education, were used once a week or almost daily. The skills and knowledge of research and statistics were used once a month, once every six months or once a year. Three of the statistical areas, analysis of covariance, multiple regression, and non-parametric statistics were never used, or used once a year.

CHAPTER I

INTRODUCTION

Studies dealing with the concept of institutional research (IR) have been conducted nationally, regionally, and within a single institution. These studies, conducted at universities, four-year colleges, and two-year colleges, have sought answers to: what is IR, what are its functions, how is it financed, and how is it organized (Cook, 1971; Cook, 1972; Garner, 1970; Johnson, 1962; Moore, 1971; Perch, 1968; Pieper, 1971; Roney, 1970; Roueche and Boggs, 1968; Swanson, 1965; and Van Istendahl, 1969).

In general, the basic function of IR is to supply research that will assist in the decision-making process (Cook, 1972). If such research is inadequately designed, conducted, analyzed, presented and/or interpreted, the administrative conclusions may be misleading and result in faulty decisions. Some of the tasks common among institutional researchers are that (s) he design, conduct, analyze, and write-up studies which may or may not include an interpretation of the results (Cook, 1972). If the researcher has not been prepared for these activities through a graduate program or an in-service training program, then a higher probability of misleading

conclusions and faulty administrative decisions may result. The emphasis of this study was to delineate the specific competencies, skills and knowledge, that are used by personnel employed as institutional researchers. These specific competencies could be considered in planning a preparation program; graduate level or in-service training, for institutional researchers.

Need for Study

There are two reasons which explain the necessity for this study. The first reason is based on the increasing demand for more research and more IR offices in the community junior colleges. The second reason is based on the lack of success of research personnel to get their reports published. The reports designed to be published are not being published because of the poor research and statistical techniques being used by the researchers. This would indicate a lack of adequate preparation or an uncertainty as to what competencies are required of institutional researchers in community junior colleges.

Development of IR in Higher Education

Viewing the recent interest in defining who and what a researcher is, one would think that research itself is a relatively new concept. On the contrary, research in the United States has its beginnings in the eighteenth century along with the establishment of higher education.

Research conducted during the eighteenth and nineteenth centuries contained some quantitative information. In 1869, for

example, the Office of Education collected and distributed basic descriptive statistics on a limited number of institutions of higher education (Saupe and Montgomery, 1970). For the most part, the types of research conducted were similar to the "consultative 'research' services [rendered by Increase and Cotton Mather in 1701] in the founding of Yale" (Garner, 1970, p. 30).

It was not until the 1920's that any organizational structure was given to the concept of IR. In fact, despite the early efforts at Stevens College, the University of Illinois and at the University of Minnesota "the term 'institutional research' did not make a solid entry into the vocabulary of higher education until the late 1950's" (Saupe and Montgomery, 1970, p. 1).

"Prior to 1955, only ten colleges actively claimed offices of institutional research" (Lahti, 1971, p. 4). The number of IR offices had increased to 115 by 1964 and to over 250 by 1968. In 1971 the Association for Institutional Researchers claimed over 900 charter members. Offices of IR appeared to increase in number and size as higher education became more complex in nature and more of a big business operation requiring extensive administrative decision-making.

An indication of the rapid development of the Offices of IR in higher education can be illustrated by the percent of fulltime institutional researchers employed by community junior colleges. Johnson's study (1962) of Western states found that only 2 percent

of the colleges that had IR offices employed researchers fulltime. According to Swanson's study (1965) less than 20 percent of the colleges had IR offices that employed researchers fulltime. In 1969 the study by Roueche and Boggs indicated that less than 25 percent of the colleges had IR offices that employed researchers fulltime. In the studies conducted by Roney (1970) and Moore (1971) approximately 39 percent of the colleges that had IR offices employed researchers fulltime.

A possible explanation for the rapid growth of the IR offices in higher education has been offered by Garner (1970) who supplied five reasons for the increased interest in IR. These suggested reasons were:

1. indirect effect of business and industry commitment to research,
2. the fact that education has become more complex, more big business,
3. the public is seeking a degree of accountability,
4. the public is seeking a degree of financial accountability,
5. the rapid development of computer technology, systems, measurement techniques, etc.

These explanations find support in the literature as indicated by quotes from several writers.

First, the community junior colleges, ". . . in an era of scarce resources, when a wide range of publics are demanding better analysis of institutional goals and more sharply defined criteria to

test the return on the investment of educational dollars, . . . find [themselves] without a well planned program of institutional self-study" (Park, 1972, p. vix). "Because it must grow rapidly, because it must change continually and remain flexible, the junior college more than any other segment of higher education must continually conduct research to guide its decisions" (Merson, 1962, p. 10).

Unfortunately most of the research on the community junior college has been conducted by institutions other than the junior college (Roueche, 1967). Only recently has the community junior college begun to view its own situation, i. e., the increase in fulltime researchers. As a result of this recent interest in the community junior college investigating itself, the colleges "can anticipate increased effectiveness, better morale, improved public esteem, and saving in cost" (Merson, 1962, p. 11).

Another reason for having a research program in the community junior college is suggested in a study by Rainey (1961). After surveying presidents and deans in community junior colleges in twenty-four states, it was concluded that "although not an absolute requirement for a position, promotion or normal salary increase at the junior college level, professional writing and research are, nevertheless, considered important by over 40 percent of the administration surveyed and play a role in employment, promotion and/or salary" (Rainey, 1961, p. 90).

Investigations into Institutional Research

In 1968 the "estimated total number of completed studies for all American junior colleges [was] 1,190. . . . [and of these,] (approximately fifty)[were] available for dissemination through ERIC" (Roueche and Boggs, 1968, pp. 8-9). If only 4 percent of all research studies are publishable, what of the 96 percent that are not published? If one considers that not all of these research studies were performed for publication purposes or "to be additions to the body of knowledge upon which all educators can draw" (Roueche and Boggs, 1968, p. 36), this would reduce the percent of unpublished research reports. Yet, "for every institutional research study received and processed by ERIC Clearinghouse for Junior College Information, six others [are] discarded because of faulty design, poor methodology, ungeneralizable findings, or just poor quality of reproduction" (Roueche and Boggs, 1968, p. 35).

The retiring editor of the American Educational Research Journal, Richard Turner, reviewed the decision process of the last three years (1971-1973) for selecting papers to be published. The papers that were not accepted for publication, or papers that required revisions before being reviewed, had major weaknesses in areas of data analysis, data presentation, and procedural descriptions (Turner, 1973).

Writing reports is only one aspect of the institutional researcher's functions. "Attempts to formalize IR have been limited by the lack

of adequately trained researchers. . . . Individuals classified as institutional researchers have represented a variety of backgrounds and have brought to their position [in] IR a variety of skills and competencies" (Moore, 1971, p. 1). Based on a sample of forty-nine institutional researchers employed by Southwestern two-year colleges, 4 percent had a degree with the major specialization in research, 16 percent in educational psychology, 23 percent in educational administration, 8 percent in higher education, 14 percent in mathematics, 8 percent in business administration and 27 percent were distributed in other areas (Moore, 1971). Other than information about degrees and areas of specialization, there have been little data to indicate exactly what specific competencies, what specific content areas of knowledge and/or skills are required or highly recommended for the preparation of institutional researchers or even educational researchers. The few studies identified and the respective methods of data collection are indicated in Table 1.

Most of these studies used a priori lists which included the biases of the study personnel, or requested a list of the courses the researchers had taken while attending college at the graduate level. Only two studies removed author bias from determining competency lists. The author biases were removed by requesting the researchers (respondents) themselves to supply the competencies they used in the performance of their job. But whether the response possibilities were predetermined or not, there were some general areas of

TABLE 1

DATA COLLECTION TECHNIQUES EMPLOYED BY
VARIOUS INVESTIGATORS TO DETERMINE COMPETENCIES
FOR RESEARCHERS

<u>A Priori Lists</u>	Courses Taken	Recommendations	Respondents Composed Lists
Moore (1971) IR*	Buswell (1966) ER	Roney (1970) IR	Moss (1966) ER
Wiersma (1964) ER**	Belcher (1972) ER		Worthen <u>et al.</u> (1972) ER
Cook (1971) IR	Perch (1968) IR		

* IR = institutional researchers

**ER = educational researchers

preparation for researchers that were considered to be necessary by the various respondents; researchers, deans, presidents of colleges and universities, and faculty. These areas were statistics, research design and methodology, and data processing. The findings of the studies suggesting these areas have been summarized in Table 2. However, these studies did not provide specific information about each of these areas. For instance, how much of a statistical background should a researcher have; i. e., is knowledge of the measures of central location and variation sufficient, or does the researcher need some work in multivariate analysis? What types of research design and methodology are pertinent? How much administrative experience is needed? What does the researcher

TABLE 2

RECOMMENDED AREAS OF ACADEMIC STUDY FOR
INSTITUTIONAL RESEARCHERS AS
DETERMINED BY SEVERAL INVESTIGATORS

Perch* (1968)	Cook*** (1971)	Roney** (1970)	Moore*** (1971)
1. research methodology	1. research methodology	1. statistics	1. writing ability
2. research analysis	2. systems analysis	2. research design	2. statistics
3. statistics	3. data analysis	3. public administration	3. higher education
4. psychology	4. junior college operations	4. public finance	4. research design
5. administrative theory	5. higher education issues	5. higher education business	5. tests and measurements
6. data processing	6. teaching experience	6. historical survey research	6. speaking ability
7. human relations	7. educational research degree	7. data processing	7. data processing
8. teaching experience	8. administrative experience	8. systems techniques	
9. administrative experience	9. higher education degree	9. human relations	

* sample from four-year colleges and universities

** sample from two-year colleges and four-year colleges and universities

*** sample from two-year colleges

need to know about data processing? The present study determined what specific skills and knowledge are useful in the performance of institutional research in community junior colleges.

The Problem

Statement of the Problem

The problem for this study was to delineate the specific competencies, skills and knowledge, used by institutional researchers in community junior colleges. The major question addressed and some of its facets:

Is there a set of basic competencies, skills and knowledge, that institutional researchers suggest as necessary in the community junior college?

1. Do institutional researchers in publicly and independently operated institutions indicate the same set of competencies?
2. Do fulltime and parttime institutional researchers indicate the same set of competencies?
3. Do institutional researchers in small, medium and large community junior colleges indicate the same set of competencies?

Assumptions

As in conducting any research study, several assumptions were made in this study. These assumptions dealt with the competency of the researchers surveyed, the ability to follow

directions and the validation of the questionnaires used in the study.

First, it was assumed that a person who was employed, fulltime or parttime, in a research position had at least minimum competencies required for a researcher.

Second, it was assumed that the directions for filling out each questionnaire used in the study were followed precisely and the definition of competency supplied would be used.

Third, it was assumed that the first questionnaire in this study (as developed by Moss [1966]) was reliable and valid. The clarification form and the final questionnaire, being directly constructed from the responses of the researchers, were assumed to have content validity.

Delimitations and Limitations

This study was subject to the advantages and disadvantages of survey research, and mailed questionnaires with open-ended and structured formats.

One of the disadvantages of survey research, that of biased responses, was not considered a disadvantage for the purposes of this study. This study was designed to obtain the personal perceptions of the researchers to the questions posed in the questionnaires. The initial questionnaire requested the individual researcher to present only his (her) point of view as to what competencies were used most often by himself (herself) as an institutional researcher. The final

questionnaire requested the individual researcher to check how often (s)he used each of the listed competencies.

The limitations of survey questionnaires, i.e., low response rate, inability to provide explanations, misinterpretation of terms, etc., were applicable to this study. Due to the limiting factors of time and cost of interviewing on a national scale, the mailed questionnaire was used.

The two questionnaire formats used in this study were open-ended and structured. The open-ended format was used in the first questionnaire. It allowed the researchers to reveal the skills and areas of knowledge used most often in their own particular situation. Equivalency of terms among the responses of the researchers was achieved through the available literature. The structured format of the final questionnaire kept the researcher focused on the list of competencies provided by the first sample of researchers. By using the scale for responses the process of tabulation and data analysis was facilitated.

The population of institutional researchers was limited to those in community junior colleges.

Definition of Terms

In order to communicate to the reader, selected terms need to be defined. While these definitions are not the only possible ones, they are the definitions used in this study. They are as follows:

Institutional research (IR) - "is research which is directed toward providing data useful or necessary in the making of intelligent administrative decisions and/or the successful maintenance operation and/or improvement of a given institution of higher education" (Stickler, 1961, p. 542).

Community junior college - a two-year institution in higher education that extends into the first two years of post high school education. The institution may be publicly or independently operated. Included in the college curriculum are the university parallel program and at least one of the following: occupational education or continuing education.

Competency - the capability to engage in specific skills and knowledge necessary for the completion of a specific activity.

Review of Related Literature

The review of the related literature has been divided into two sections: additional definitions of IR, and a review of investigations on educational researchers' competencies.

IR has been defined in a variety of ways, each reflecting the particular bias of the institution or the individual in charge of the IR office. Some of the possible definitions used in the literature are that IR:

1. "is a methodological study of problems that are concerned with the process of imparting knowledge, information, or skills to the students within a formal organization which had the effectiveness of this process as one of its continuing objectives" (Wiersma, 1969, p. 274),
2. "is concerned with evaluation of past activities, monitoring of current programs and policies, and modeling and assessment of future possibilities" (Suslow, 1972, p. 1),

3. "consists of data collection, analyses, reporting, and related staff work designated to facilitate operations and decision-making within institutions of higher education" (Saupe and Montgomery, 1970, p. 3),
4. "refers to all studies made on your campus which are designed to improve your college or any part of its program or operations" (Swanson, 1965, p. 6),
5. "is a centrally coordinated program of self-study within an institution, designed to systematically collect, analyze, evaluate and interpret variegated forms of information as it related to any pertinent aspect of the university operation or its components, in order to provide the data base from which the institution may make more efficient, effective and educationally sound use of its resources to fulfill its avowed purpose" (Garner, 1970, p. 2).

If one considers the definition of IR as being "a special kind of educational research in colleges and universities (that is) focused on the institution, and its parts are largely directed toward academic planning and administrative activities. . . ." (Suslow, 1972, p. 17), there are additional sources of information on the educational qualifications of institutional researchers.

In 1966 two investigations concerning the areas of competency recommended for conducting ER were conducted. Buswell et al., (1966) gathered data on courses that educational researchers have had in their training program in college. The twelve categories indicated were:

1. elementary statistics
2. correlation
3. sampling theory, F and t tests
4. factor analysis

5. analysis of variance, analysis of covariance
6. multivariate statistics
7. non-parametric statistics
8. experimental design
9. computer programming techniques
10. probability
11. scaling techniques
12. hypothesis testing

The second study was designed to determine a set of competencies for educational researchers. Moss's (1966) results indicated that there were twenty-one general classifications of competencies that were necessary in the performance of the job of educational researcher. These general classifications, along with some specific competencies delineated, were:

1. statistics - statistical skills, knowledge of procedure
2. communication skills - ability to organize data
3. review of literature - adequate library, relevant research
4. research design - research design of studies in various fields
5. generalization - data interpretation, ability to organize
6. peer group - ability to get cooperation, human relations skills
7. developing the problem - awareness of researchable problems
8. measurement - specific scales to be used; theory of measurement
9. learning theory - learning theory
10. philosophy - philosophical analysis of ideas

11. social process - analysis of social process
12. computer - computer skills, data processing skills
13. business ability - ability to secure grants, ability to keep costs low
14. persistence - patience, perseverance
15. mathematics - mathematical theory of statistics
16. observation - perceptive observations
17. common sense - common sense
18. reading skills - scanning skills
19. creativity - creativity
20. health - good health
21. clinical experience - clinical experience (Moss, 1966, pp. 45-47).

Moss (1966) did not define the term competency. Each researcher was to interpret the term as (s)he saw fit.

In 1969 the University of Toledo began an on-the-job training program for researchers under the direction of Dr. William Wiersma. The program, determined on an a priori basis, was administered in fifteen sessions, each five to six hours in length. The topics of the respective sessions were as follows:

1. introduction to program, descriptive statistics
2. inferential statistics I
3. inferential statistics II
4. inferential statistics III
5. introduction to measurement
6. additional topics in measurement

7. non-parametric statistics
8. survey research and sampling techniques
9. research design I
10. research design II
11. multiple correlation
12. multivariate analysis
13. critique of published research
14. use of IBM equipment and calculators
15. elementary decision theory

There was no indication of the specific areas covered within each topic.

In these three references dealing with educational researchers, (Buswell et al., 1966; Moss, 1966; and Wiersma, 1969), the areas of statistics, research design (methods), and data processing continued to be a common denominator as in the institutional researcher references in Table 2.

In another investigation, Belcher (1972) studied four colleges with graduate programs in ER, finding that nine to sixteen credit hours were required in each of the areas of statistics, research design, and computers. Based on the data collected on the four colleges Belcher (1972) developed a program for a doctor of education degree with a major in educational research. The topics covered in the program were as follows:

- I. Statistics
 - a. introduction

- b. intermediate
 - c. non-parametric
 - e. bayesian
- II. Evaluation
- a. measurement and evaluation
 - b. advanced measurement and evaluation
 - c. surveys and rating scales
 - d. theory of measurement
- III. Research methods
- a. research methods and techniques
 - b. research design
 - c. advanced research design
 - d. survey research
 - e. educational planning
 - f. independent study
 - g. writing and interpreting research
 - h. computer programming
 - i. federal grants and programs
 - j. advanced research and analysis
- IV. Other courses and work
- a. social foundations
 - b. curriculum - media
 - c. minor areas - psychology, sociology, mathematics, etc.
 - d. dissertation (Belcher, 1972, pp. 74-75).

The most recent investigation found on determining the competencies of educational researchers was conducted by a task force from the American Educational Research Association (AERA). The intent of the task force was to delineate task areas, or job activities, and the specific competencies, skill and/or knowledge needed in order to complete the defined task. Worthen et al. (1972), in reporting the results, defined twelve task factors and seven competency factors. These factors were extracted from a series of personal interviews with 116 research and evaluation personnel from highly recognized projects across the nation.

The names of the twelve task factors and the names of the seven competency factors are presented in Table 3. For each task factor there are one or more competency factors. For example, the first task factor, designing research studies and conducting and interpreting data analyses requires competency factor 1, data collection, processing, analysis and presentation competencies, and competency factor 7, statistical competencies. Within each task and competency factor there are more specific definitions of the job to be performed or more specific competencies needed in order to perform the job. The previous example with task factor 1 and competency factors 1 and 7 is illustrated in Table 4 in the more specific form.

TABLE 3

TASK AND COMPETENCY FACTORS WITH THE
CORRESPONDING COMPETENCY FACTOR NUMBER IN
PARENTHESIS FOR EACH TASK FACTOR

<u>Task Factor</u>	<u>Competency Factor</u>
1. Designing research studies and conducting and interpreting data analyses (1, 7)	1. Data collection, processing analysis and preparation competencies.
2. Developing instructional materials (2, 4, 5)	2. Evaluation competencies.
3. "First-level" administration of inquiry and inquiry-related projects and activities (2, 5, 6)	3. Ability to obtain and use new information to forecast events or outcomes or develop new ideas.
4. Conducting evaluations and constructing and using data collection instruments	4. Knowledge of students, teachers, and educational and psychological processes.
5. Diffusing information and products (1, 3)	5. Operational administrative competencies.
6. Developing and operating information storage and retrieval systems (3)	6. Policy making and decision making competencies.
7. Evaluating inquiry and inquiry-related proposals and monitoring funded projects (2, 5)	7. Statistical competencies.
8. Searching, reading, and reviewing the literature (3)	
9. Designing and maintaining computer systems and writing computer programs (5)	
10. Unnamed.	

TABLE 3 (Continued)

<u>Task Factor</u>	
11.	"Second-level" administration of inquiry and inquiry-related projects and activities (5, 6)
12.	Developing and scoring tests (4)

Source: Worthen, B. R., Anderson, R. D., and Byers, M. L.
A Study of Selected Factors Related to the Training of
Researchers, Developers, Diffusers, and Evaluators,
Washington, D. C. USOE Grant OEG -0-71-0617-520, 1972.

TABLE 4

EXAMPLE OF THE TASK FACTOR 1 AND ITS
CORRESPONDING COMPETENCY FACTORS 1 AND 7

<u>Task Factor 1</u>	<u>Competency Factor 1</u>
Designing research studies and conducting and interpreting data analyses	Data Collection, processing, analysis and presentation competencies
Using Computer facilities and services	Ability to design card layouts to allow data and analysis within computer constraints and ability to use standardized computer programs (e. g., BMD series)
Planning and/or selecting data analysis techniques	Knowledge of how computers might be used to analyze data
Conceptualizing or formulating a problem or hypothesis for empirical studies	Knowledge of t-tests and critical ratios
Interpreting, reviewing, and integrating the results of data analysis	Knowledge of alternate methods of presenting statistical data (e. g., charts, graphs, or tables)
Formulating a design for a research study	Ability to use computer coding
Conducting data analyses by non-computerized methods	Knowledge of ANOVA or ANCOVA designs and techniques
Conducting interviews	Ability to read and interpret computer output
Reviewing and critiquing extent of educational programs and products	Ability to keypunch
Developing a computerized data bank and retrieval system	Knowledge of questionnaire construction techniques and appropriate uses for questionnaires

TABLE 4 (Continued)

Competency Factor 1

Knowledge of factor analysis techniques

Ability to allocate time and money wisely in arranging computer work

Ability to describe, explain, or elaborate in writing

Ability to formulate a rationale to support a particular position or argument

Ability to choose (or design) appropriate statistical techniques for data analysis

Ability to write in an interesting or appealing style

Knowledge of norming procedures

Ability to revise and rewrite

Ability to arrange items in a format which is easy to read

Ability to construct instruments to assess attitudes and other affective variables

General speaking skills

Ability to discuss the advantages of establishing evaluation systems in educational institutions

TABLE 4 (Continued)

Competency Factor 1

Knowledge of specific experimental and quasi-experimental research designs

Competency Factor 7Statistical Competencies

Knowledge of statistical variance and standard deviation

Knowledge of theoretical assumptions underlying various statistical techniques

Knowledge of statistical regression techniques

Ability to design studies to control extraneous variables

Ability to choose (or design) appropriate statistical techniques for data analysis

Knowledge of capabilities of local computer systems

Ability to draw or compose pictures or illustrations for curriculum materials

Ability to construct items that measure what one sets out to measure

Source: Worthen, B. R., Anderson, R. D., and Byers, M. L.
A Study of Selected Factors Related to the Training of
Researchers, Developers, Diffusers, and Evaluators,
 Washington, D. C. USOE Grant OEG -0-71-0617-520, 1972.

Summary

IR has been studied mainly as an organization with functions, guidelines for operation, budgeting, etc. to be determined. The nine studies indicated in Table 1 inquired into the general qualifications of researchers, four of which were oriented specifically toward the institutional researcher. Only two studies were found which attempted to further delineate the competencies indicated by the personal responses of the personnel engaged in 'good' research. These studies (Moss, 1966; Worthen et al., 1972) did not provide a predetermined list nor did they ask for the courses the researchers had in college. They requested information as to the competencies used on-the-job. These two studies dealt specifically with educational researchers whose research focus is not specifically that of the institution, academic planning, administrative activities, etc.

Research in education is not at a level of adequate performance or competence when only 4 percent of the papers submitted to the ERIC Clearinghouse for Junior College Information are publishable or when research papers are rejected by the American Educational Research Journal because of faulty data analysis. Graduate programs or on-the-job training have in the past lacked data as to what should be the basic content areas of study, and to what level of content should the areas be studied. How much statistics, how much data processing; what types of research design; are questions that need

answers in order to conduct research in the community junior college. Is writing ability, speaking ability, ability to cooperate with others, leadership, essential in the performance of conducting IR?

Overview

The design of the study is presented in Chapter 2. In Chapter 3 the results of the study are provided and in Chapter 4 the discussion of the results and the conclusions are presented.

CHAPTER II

DESIGN OF THE STUDY

In this chapter the methodology employed in delineating the competencies used by the personnel engaged in IR in the community junior colleges is described. Discussed in the various sections are the subjects, the sampling procedures, the instrumentation and its validation, and the procedures for analyzing the data.

Subjects

The subjects of this study were persons in charge of the research programs in the randomly selected community junior colleges. At this point in time there is no clear way of defining who the "good" institutional researchers are as there was in Moss's study (1966) or in the Worthen et al. study (1972), as there are no organizations whose only members are defined as "good" researchers, nor are there any community junior colleges that are known for outstanding IR offices. Therefore, the information on the status; fulltime or parttime, the type of college; public or independent, and the size of the college based on enrollment, provided the means for determining types or categories for researchers.

There is no organization for only community junior college researchers. Therefore, the subjects, the researchers, were located through the community junior colleges. Not all community junior colleges have IR offices. The colleges were selected from an extensive directory of two-year institutions throughout the United States. The directory is published by the American Association of Community and Junior Colleges each year. Institutions need not be members of the organization in order to be included in the directory. The directory contains information as to the name of the president or the head of the college, the address, phone number, enrollment and other types of data. It does not indicate whether the college has an IR office.

Using this study's definition of community junior colleges there were 968 public and independent two-year colleges in the total population. There were ninety-seven colleges per sample selected as sources for subjects.

Sampling Procedures

There were two samples used in this study. The rationale for using two samples stems from the type of questionnaire designed for this study. As illustrated in Table 1 a procedure used frequently by researchers for determining on-the-job skills has been an a priori list of skills. Certain problems with this procedure have been identified. "The skill lists [seem] to originate with the particular

author's conception of [the task being studied]. Responses to such lists may reflect the emphases and unwitting biases the authors built into the lists much more than they reflect actual classes of . . . activities which are important to be good [researchers]' (Worthen et al., 1972, pp. 3-4).

A solution to this problem may be effected by requesting free, unprompted responses from the personnel studied. Two basic ways have been used to acquire this type of response. The first way has been to conduct extensive task analyses and personal interviews. The second way has been to utilize a questionnaire requesting individual responses to the competencies (s)he uses in the performance of his (her) job. As personal interviewing is time consuming and costly on a national scale, this study used the latter procedure, the questionnaire.

The actual sampling procedure used in this study was that of stratified random sampling. "A stratified random sample is one obtained by separating the population elements into nonoverlapping groups, called strata, and then selecting a simple random sample from each stratum" (Mendenhall et al., 1971, p. 53).

The variables used in determining the strata were the type of college, publicly operated or independently operated, and the gross enrollment size of the college. As there was no means of equating fulltime equivalent formulas for all fifty states, the total enrollment of fulltime and parttime students was used for determining enrollment size.

Research has indicated that there were differences between publicly and independently operated colleges in the percent of colleges having an IR office (Pieper, 1971). Van Istendahl found that "institutional size [was] much more a determinant of the research organization than [was] institutional age" (1969, p. 45).

A 10 percent sample from the population was selected from the directory for each sample. Due to cost, the fact that one type of institution and one type of personnel were being studied, and the type of sampling technique used, a small sample was used as opposed to a large sample.

The structure of the stratified random sample used in this study is displayed in Table 5.

TABLE 5

PROPORTIONS OF TOTAL POPULATION OF EACH STRATUM
AND THE NUMBER OF COLLEGES SELECTED WITHIN EACH
STRATUM USING THE STRATIFIED
RANDOM SAMPLING TECHNIQUE

<u>Enrollment</u>	<u>Public</u>		<u>Independent</u>	
	Percent of Total Population	Sample Size	Percent of Total Population	Sample Size
10,000 +	5	5	0	0
5,000 - 9,999	10	10	0	0
0 - 4,999	64	<u>62</u>	21	<u>20</u>
Total		<u>77</u>		<u>20</u>

Instrumentation

The questionnaire used for the first sample of this study was the same questionnaire used by Moss (1966) (Appendix B). This questionnaire requests that the researcher select and then rank seven specific competencies (s)he uses most often in the performance of his (her) job.

Because some of the responses from the first questionnaire were not specific, e. g. , statistics, another step was used. This step consisted of organizing the responses from the first questionnaire into categories. These categories or general competencies were sent to those researchers who had responded to the first questionnaire (Appendix E).

Based on the returns from this clarification questionnaire and the initial questionnaire, a competency list was developed so that a second sample of researchers could respond to a common list of competencies that had been created by fellow researchers. The second sample of researchers was requested to check the appropriate scale value as to how often they used each of the competencies on the list (Appendix G and Appendix H). The scale values were provided on a separate page so that the researchers would not forget the meaning of the values or have to refer constantly to the first page for the definition of the scale values.

Validation of the Instrumentation

The reliability and validity of the initial questionnaire was

established by Moss (1966). The clarification form that was used was based on the returns from the initial questionnaire and was assumed to have content validity. Any changes made in the actual wording of the competencies were done for editorial purposes and did not alter the proposed intent of the competency. The final questionnaire, having been established directly from the responses of the first two questionnaires, was assumed to have content validity. (To establish the reliability of the final questionnaire copies were sent to four institutional researchers in community junior colleges in Central Florida. A personal interview was conducted with each researcher to assist in refining the questionnaire as well as to check the consistency of the responses each researcher made.) During the interview the researchers were asked how often they used several of the competencies contained on the list. Their responses were checked against the scale value they had checked on the actual questionnaire. The researchers at the time of the interview did not have the list in their possession. There was complete agreement between the written and oral responses for all four researchers. (These results suggested a substantial reliability for the final questionnaire.) The order of the final questionnaire competencies was not based on the number of times the competencies were mentioned by the first sample of researchers. An attempt was made to keep together the specific competencies that would be categorized under one general competency.

For example, all the specific competencies relating to community college education followed one another in the final list. In the directions for the final questionnaire it was stated that there was no specific order to the competencies listed (Appendix H).

Procedures

Sample One

A 10 percent stratified random sample was selected from the 1973 Community and Junior College Directory. The following information was included in the letter mailed to each selected college:

1. a cover letter explaining the study and requesting information on the employment status of the person in charge of IR (Appendix A),
2. an open-ended questionnaire requesting the ranking of seven specific competencies (Appendix B),
3. a self-addressed, stamped return envelope.

After two weeks a second letter requesting the return of the questionnaire was sent to those colleges from which there were no responses (Appendix C). Included with this letter was another copy of the open-ended questionnaire. The goal for the returns was 80 percent of the selected sample. As 80 percent of the selected sample still did not respond after the use of the second letter, a final follow-up was conducted by the telephone for those still failing to respond. An attempt was made to receive 80 percent responses from each stratum so the colleges that received the telephone calls were randomly selected from the nonrespondents in each stratum that had not reached the 80 percent quota.

As there was a need for an additional form to clarify and specify some of the terms, the clarification letter and form were sent to the first sample respondents (Appendix D and Appendix E). There was no quota set for the amount of returns on this form.

Sample Two

The second sample of colleges was selected in the same manner as the first sample except those colleges that were used in the first sample were excluded from the population. The colleges from the second sample were sent the following information:

1. a cover letter explaining the study and requesting information on the employment status of the person in charge of IR (Appendix F),
 2. a competency list to be checked as to frequency each competency is used by the researcher (Appendix G and Appendix H),
- and 3. a self-addressed, stamped return envelope.

After two weeks, due to a time factor and the rate of responses, telephone calls were made to the colleges who had not responded in order to obtain the 80 percent goal for returns. The same procedure as in sample one was used in selecting the colleges to be phoned.

Analysis

From both samples the responses to the questions on the cover letter provided information on the employment status of the researcher in the community junior colleges. The information was given in terms of the percent of public and independent colleges having,

fulltime researchers; parttime researchers with IR being their primary responsibility; and parttime researchers with IR not being their primary responsibility; and small, medium, and large enrollments. This information on the different categories into which researchers could be placed provided the basis on determining if there was a set of common and/or basic competencies used by researchers in the different categories.

The institutional researchers in the first sample were provided with an open-ended questionnaire. The questionnaire requested a rank ordered list of seven specific competencies that the individual researchers used most often in the performance of his (her) job. The various competency lists received were compared for similarity of terms, need for clarification, number of times mentioned by the various researchers, and sorted into twenty-one general categories or competencies. These twenty-one general competencies were then used in the clarification form which was sent to the researchers responding to the first questionnaire. The clarification forms were compared in similar manner as the first questionnaire. Based on the results of the first questionnaire and the clarification form the competencies for the final questionnaire were established.

The responses of the second sample to the final questionnaire were compared using Kendall's Coefficient of Concordance. Each of the three categories of researchers, public and independent; fulltime and parttime; and the different sized colleges, were compared

separately using Kendall's Coefficient of Concordance. In order to compute Kendall's Coefficient of Concordance it was necessary to first rank order the ninety-six competencies for each group within each category. The rank ordering was done using the median and interquartile ranges. The rank of the competency was determined by the size of the median, the larger the median the higher the rank. If there was more than one competency with the same median, the interquartile range was used to determine rank. If there was a difference in the interquartile range, the competency that had the smallest range was given the higher rank as it indicated greater agreement among the researchers as to how often it was used. If the medians were the same and the interquartile ranges were the same, the rank was based on tied scores. The rank of one indicated that the competency was used most often and had the highest degree of consensus or agreement among the researchers as to its use.

This rank ordering of the ninety-six competencies was done for each group within each category. Using Kendall's Coefficient of Concordance the ranks of each group within each category were compared to determine if the rank ordering of the competencies was the same for all the groups within each category.

The hypotheses were:

- H_1 : There is no agreement between institutional researchers in publicly and independently operated community junior colleges as to the common and/or basic competencies used in their jobs.

- H₂: There is no agreement between fulltime and parttime institutional researchers in community junior colleges as to the common and/or basic competencies used in their job.
- H₃: There is no agreement between institutional researchers from the different sized community junior colleges as to the common and/or basic competencies used in their job.

Summary

There was one source of information in this study, the institutional researcher in the community junior college. The first sample of institutional researcher provided different lists of competencies used most often in their particular situation. After clarification of these lists, an overall list was developed and sent to a second sample of institutional researchers who checked how often they used each of the listed competencies.

Using Kendall's Coefficient of Concordance, the rank ordering of the lists for the different groups within each category of institutional researchers were compared to determine if there is a set of common and/or basic competencies used on the job by these researchers.

CHAPTER III

RESULTS

This chapter has been divided into two main sections; the results of the first sample on the open-ended questionnaire and the clarification form, and the results of the second sample to the final questionnaire.

Sample One

The returns from the open-ended questionnaire after the request letter and telephone calls resulted in the distribution indicated in Table 6.

TABLE 6
RETURNS FROM FIRST SAMPLE

<u>Enrollment</u>	<u>Public</u>		<u>Independent</u>	
	<u>Number Sent</u>	<u>Number Returned</u>	<u>Number Sent</u>	<u>Number Returned</u>
10,000 +	5	4	0	0
5,000 - 9,999	10	8	0	0
0 - 4,999	62	<u>52</u>	20	<u>16</u>
Total		64		16

A total of eighty (82 percent) responses were returned in response to the letters sent to the first sample. Of those colleges who responded to the first questionnaire 44 percent indicated that there was no one designated as an institutional researcher for their particular college. Of the 56 percent of the colleges who responded as having an IR officer, 27 percent of the researchers were employed fulltime; 18 percent of the researchers had other responsibilities, but research was their primary concern; and 55 percent of the researchers had other responsibilities that took precedence over research. Based on these returns estimations and bounds on the error of estimation were made as to the percent of the total population that would have IR offices, fulltime researchers, parttime researchers with research of primary concern and with research not their primary concern. These data are presented in Table 7.

TABLE 7
FIRST SAMPLE PERCENT ESTIMATIONS AND
BOUNDS ON ERRORS OF ESTIMATION

	Estimated Percent	Bounds on error of estimation in terms of percentage
Colleges having IR	56	(51, 61)
Colleges having fulltime IR	27	(8, 46)
Colleges having parttime IR with research as primary responsibility	18	(0, 36)
Colleges having parttime IR with other primary responsibilities than research	55	(42, 68)

The actual distribution of the returns are indicated in Table 8.

TABLE 8
BREAKDOWN OF RETURNS FROM
EACH STRATUM IN FIRST SAMPLE

<u>Enrollment</u>	<u>Public</u>				<u>Independent</u>			
	<u>No IR</u>	<u>Full</u>	<u>1st</u>	<u>Not 1st</u>	<u>No IR</u>	<u>Full</u>	<u>1st</u>	<u>Not 1st</u>
10,000 +	1	1	1	1	0	0	0	0
5,000 - 9,999	2	3	1	2	0	0	0	0
0 - 4,999	$\frac{23}{26}$	$\frac{8}{12}$	$\frac{5}{7}$	$\frac{16}{19}$	$\frac{9}{9}$	$\frac{0}{0}$	$\frac{1}{1}$	$\frac{6}{6}$
Total								

As the initial questionnaire requesting specific competencies was not structured, there were several single competencies listed by those researchers responding that were determined to be similar and thus one competency. The competencies that were determined to be equivalent were listed as one competency with the assistance of the available literature. The term competency was defined in the cover letter as skills and/or knowledge, but was still open to the interpretation of the researcher. From the various responses received, twenty-one general areas of competency were developed, some of which were similar to Moss's (1966) twenty-one general classifications. Within each area there were some specific competencies provided (Table 9).

TABLE 9

GENERAL AREAS OF COMPETENCY WITH
SOME SPECIFIC COMPETENCIES PROVIDED BY FIRST SAMPLE

General Area of Competency (General Skills and/or Knowledge)	Specific Competency (Specific Skills and/or Knowledge)
Community College Education	curriculum, instruction, student
Own Institution	structure, policies, goals, objectives, personnel
Community	political issues, population parameters
Computer	programming, capabilities, limitations
Research Methodology	methodology, survey, legal research, promote decision making
Research Design	experimental design
Data Gathering (Collection)	sampling, sources of data
Data Processing	supervision, useable form for data
Data Analysis	measurement techniques, evaluation
Statistics	descriptive, graphs, analysis of variance, chi-square
Instrument Development	measurement techniques, questionnaire, interview, test construction

TABLE 9 (Continued)

<u>General Area of Competency</u>	<u>Specific Competency</u>
Organization-Coordination	IR office, data
Communication Skills	written presentation, laymen terms, write, talk
Review of Literature	library skills, trends, reading
Administrative Ability	leadership, delegate responsibility
Planning	facilities, projecting enrollment
Systems Analysis	operations research
Management Techniques	PERT, MIS, PPBES, MBO
Evaluation of Data	recognition of usefulness, limitations, synthesis
Human Relations	cooperation with others
Personal Characteristics	curiosity, persistence

The clarification form (Appendix E) contained the twenty-one general areas. This form was sent to the forty-five researchers who had responded to the first questionnaire. One-third of the clarification forms were returned. Additional specific competencies were mentioned as well as the clarification of some of the terms that had been provided. The combination of the results from this clarification form and the initial competency ranking form resulted in the final questionnaire (Appendix H). Several competencies listed only once by one researcher and judged to be not equivalent to other competencies were not considered in any of the analyses.

Sample Two

After telephone calls the returns from the final questionnaire consisting of a scaled checklist of specific competencies resulted in the distribution indicated in Table 10.

TABLE 10
RETURNS FROM SECOND SAMPLE

<u>Enrollment</u>	<u>Public</u>		<u>Independent</u>	
	Number Sent	Number Returned	Number Sent	Number Returned
10,000 +	5	5	0	0
5,000 - 9,999	10	8	0	0
0 - 4,999	62	<u>49</u>	20	<u>18</u>
Total		62		18

A total of eighty (82 percent) responses were returned in response to the letters sent to the second sample. Of those colleges who responded to the final questionnaire 60 percent indicated that there was no one designated as an institutional researcher for their particular college. Of the 40 percent of the colleges that responded as having an IR office, 47 percent of the researchers were employed fulltime, 9 percent of the researchers had other responsibilities, but research was their primary responsibility, and 44 percent of the researchers had other responsibilities that took precedence over research. Based on these returns estimations and bounds on the error of estimation were made as to the percent of the total population that would have IR offices, fulltime researchers and part-time researchers with and without research as their primary concern (Table 11).

TABLE 11
SECOND SAMPLE PERCENT ESTIMATIONS AND
BOUNDS ON ERRORS OF ESTIMATION

	Estimated Percent	Bounds on error of estimation in terms of percentage
Colleges having IR	40	(35, 45)
Colleges having fulltime IR	47	(25, 69)
Colleges having parttime IR with and without research as primary responsibility	54	(35, 73)

The actual distribution of the responses are indicated in Table 12.

TABLE 12
BREAKDOWN OF RETURNS FROM
EACH STRATUM IN SECOND SAMPLE

<u>Enrollment</u>	<u>Public</u>				<u>Independent</u>			
	<u>No IR</u>	<u>Full</u>	<u>1st</u>	<u>Not 1st</u>	<u>No IR</u>	<u>Full</u>	<u>1st</u>	<u>Not 1st</u>
10,000 +	1	1	2	1	0	0	0	0
5,000 - 9,999	4	2	0	2	0	0	0	0
0 - 4,999	$\frac{32}{37}$	$\frac{10}{13}$	$\frac{1}{3}$	$\frac{6}{9}$	$\frac{11}{11}$	$\frac{2}{2}$	$\frac{0}{0}$	$\frac{5}{5}$
Total								

There were three hypotheses tested. The first hypothesis focused on the agreement between researchers in publicly operated and independently operated community junior colleges with respect to the rank order of the ninety-six competencies on the final questionnaire. The second hypothesis was the same except the groups compared were fulltime and parttime researchers. The third hypothesis was the same except the groups compared were researchers from different sized colleges. Because small numbers tend to distort the results, parttime researchers with research as their primary responsibility were combined with the parttime researchers with research not their primary responsibility, and the researchers from the medium-sized colleges and the researchers from the large colleges who were combined and considered as researchers from large colleges.

Kendall's Coefficient of Concordance compared the rank orders of the ninety-six competencies for each of the three hypotheses. Because the number of items to be ranked was greater than seven the results from Kendall's Coefficient of Concordance approximated a chi-square distribution (Table 13) (Siegel, 1956, pp. 229-239).

TABLE 13

KENDALL'S COEFFICIENT OF CONCORDANCE AND
CHI-SQUARE VALUES WITH DEGREES OF
FREEDOM FOR TESTED HYPOTHESES

	Kendall's	chi-square	df
Hypothesis 1			
Public - Independent	0.927	176.13	95
Hypothesis 2			
Fulltime - Parttime	0.961	182.59	95
Hypothesis 3			
Small - Large	0.949	180.31	95

All the chi-square values had the probability of occurrence under the null hypothesis of less than .005 with 95 degrees of freedom. All three null hypotheses were rejected. There was "agreement among the [groups which was] higher than it would [have been] by chance" (Siegel, 1956, p. 237).

Because there was complete agreement among all three sets of researchers, the ninety-six competencies were ranked for all thirty-two researchers who responded to the final questionnaire

based on the median and the interquartile range, index of consensus. These results are presented in Table 14.

The top third of the competencies were used once a week or almost daily. The index of consensus, the interquartile range, ranged from 0.593 to 3.096 which indicated that 50 percent of those researchers responding had less than one scale value between them up to three scale values. The bottom third of the ranked competencies were never used, used once a year or once every six months. The index of consensus ranged from 1.700 scale values to 4.094 scale values.

Summary

The responses from the initial open-ended questionnaire and the clarification form provided the basis for the final questionnaire which had ninety-six specific competencies listed. Equivalency of terms was determined by the writer with the assistance of available literature.

The three hypotheses were tested and rejected using Kendall's Coefficient of Concordance which was transformed to a chi-square statistic.

TABLE 14

RANK ORDER LIST OF COMPETENCIES WITH
MEDIAN AND INTERQUARTILE RANGE

<u>Rank</u>	<u>Competency</u>	<u>Median</u>	<u>Interquartile Range</u>
1	Ability to communicate with others	6.907	0.593
2	Ability to communicate orally with others in laymen's terms	6.860	0.640
3	Working knowledge of own college's procedures	6.833	0.667
4	Working knowledge of own college's goals	6.773	1.136
5.5	Working knowledge of own college's structure	6.773	1.303
5.5	Ability to remain objective	6.773	1.303
7	Ability to carry through a task; persistence	6.738	0.994
8	Ability to remain flexible	6.738	1.049
9	Working knowledge of own college's philosophy	6.725	1.155
10	Working knowledge of own college's policies	6.717	0.852
11	General knowledge of community college education	6.685	1.369
12	Ability to communicate in written form; clear, concise, organized and in laymen's terms	6.658	1.029
13	Skill in obtaining cooperation and support	6.658	1.030
14	Ability to rephrase an answer for clarification	6.658	1.293

TABLE 14 (Continued)

<u>Rank</u>	<u>Competency</u>	<u>Median</u>	<u>Interquartile Range</u>
15	Working knowledge of own college's faculty	6. 658	2. 474
16	Ability to present information to others logically	6. 611	1. 143
17	Working knowledge of own college's students	6. 611	2. 143
18	Ability to interpret data and results of data	6. 559	1. 529
19	General knowledge of community college philosophy	6. 559	2. 862
21	Working knowledge of own college's curriculum	6. 500	1. 500
21	Knowledge of data sources within the college	6. 500	1. 500
21	Ability to organize office efficiently	6. 500	1. 500
23	Working knowledge of own college's needs, "hot issues"	6. 370	1. 800
24	Leadership ability	6. 357	1. 967
25	General knowledge of community college curriculum	6. 333	2. 217
26. 5	Working knowledge of data gathering	6. 278	1. 929
26. 5	Ability to make decisions based on data	6. 278	1. 929
28	Ability to see data capabilities	6. 250	1. 929
29	General knowledge of community college students	6. 214	2. 429

TABLE 14 (Continued)

<u>Rank</u>	<u>Competency</u>	<u>Median</u>	<u>Interquartile Range</u>
30	Ability to disseminate results	6.200	1.718
31	Working knowledge of data analysis	6.100	2.000
32	Ability to delegate responsibility	6.100	3.096
33	Ability to organize, coordinate studies	6.000	1.873
34	Working knowledge of data processing	5.929	3.333
35	Working knowledge of geographic area	5.900	2.450
36	General knowledge of community college instruction	5.700	2.816
37	Ability to organize research data for analysis	5.688	1.873
38	Ability to organize research data for presentation in reports	5.643	2.267
39	Skill in being a consultant within the college in a variety of areas of study	5.611	1.778
40	Working knowledge of descriptive statistics	5.500	3.167
41	Knowledge of who and where to obtain computer assistance	5.300	3.000
42	Ability to delegate authority	5.286	2.975
43	Working knowledge of local population	5.000	2.547
44	Working knowledge of computer capabilities; limitations	5.000	2.750

TABLE 14 (Continued)

<u>Rank</u>	<u>Competency</u>	<u>Median</u>	<u>Interquartile Range</u>
45	Skill in making own college's objectives measurable	5.000	2.756
46.	Working knowledge of local agencies and their functions	4.944	2.900
47	Ability to develop instruments for data collection	4.929	2.500
48	Working knowledge of community attitudes toward college	4.875	2.314
49	Knowledge of data sources outside college	4.833	2.238
50	Working knowledge of socio-economic structure of community	4.833	2.700
51	Ability to design research for specific situations, evaluation procedures	4.700	2.500
52	Working knowledge of computer applications	4.700	4.778
53	Working knowledge of graphs and charts	4.667	2.200
54	Working knowledge of research design, experimental design	4.500	3.750
55	Working knowledge of machines (calculators, keypunch, card sorters)	4.500	5.111
56	Working knowledge of research design; quasi-experimental design	4.300	3.000
57	Ability to conduct sampling procedures	4.250	2.357

TABLE 14 (Continued)

<u>Rank</u>	<u>Competency</u>	<u>Median</u>	<u>Interquartile Range</u>
58	Working knowledge of sampling techniques	4.250	2.643
59	Working knowledge of community labor conditions	4.250	3.000
60	Working knowledge of measurement techniques; reliability, validity	4.200	2.420
61	Working knowledge of local politics	4.182	2.125
62	Working knowledge in dealing with grants	4.100	3.429
63	Working knowledge of facilities planning	4.071	2.625
64	Ability to forecast, project student enrollment	4.045	1.850
65	Ability to develop questionnaires	3.938	2.250
66	Ability to conduct interviews	3.929	3.200
67	Working knowledge of state politics	3.917	1.700
68	Computational skill in descriptive statistics	3.900	3.351
69	Working knowledge of planning techniques	3.833	2.166
70	Working knowledge of research design; <u>ex post facto</u> designs	3.750	4.094
71	Ability to develop surveys for mail and telephone	3.722	2.833

TABLE 14 (Continued)

<u>Rank</u>	<u>Competency</u>	<u>Median</u>	<u>Interquartile Range</u>
72	Working knowledge of correlation	3.625	2.756
73	Ability to forecast, project economic features of community	3.450	1.731
74	Working knowledge of national politics	3.400	2.233
75	Working knowledge of scaling techniques	2.944	2.500
76	Computational skill in correlation	2.875	3.343
77	Working knowledge of t -test	2.667	3.015
78	Working knowledge of linear regression	2.500	2.511
79	Working knowledge of MIS	2.500	4.250
80	Working knowledge of chi-square	2.438	2.638
81	Working knowledge of analysis of variance	2.278	2.511
82	Computational skill in chi-square	2.143	2.670
83	Working knowledge of analysis of covariance	2.125	1.987
84	Working knowledge of non-parametric statistics	2.100	2.885
85	Computational skill in t -test	2.083	2.896
86	Working knowledge of multiple regression	2.071	2.669
87.5	Computational skill in analysis of variance	2.000	2.385

TABLE 14 (Continued)

<u>Rank</u>	<u>Competency</u>	<u>Median</u>	<u>Interquartile Range</u>
87.5	Computational skill in linear regression	2.000	2.385
89	Working knowledge of MBO	2.000	2.929
90	Working knowledge of PPBS	1.900	3.679
91	Working knowledge of PERT	1.700	1.734
92	Computational skill in analysis of covariance	1.667	2.070
93	Computational skill in multiple regression	1.500	2.700
94	Working knowledge, skill in computer programming	1.500	3.833
95	Computational skill in non-parametric statistics	1.441	2.696
96	Skill in computer packages (SPSS, BiMed)	1.441	3.029

CHAPTER IV

DISCUSSION AND CONCLUSIONS

This chapter has been divided into two main sections: the discussion of the results and the conclusions made from the results.

Discussion

The discussion section has been divided into the discussion of the returns of the questionnaires, the initial questionnaire and clarification form, and the final questionnaire.

Returns

Based on the returns from the first sample it was estimated that 56 percent of the colleges had an IR officer. From the returns for the second sample it was estimated that 40 percent of the colleges had an IR officer.

Some possible explanations for the differences in the percent of colleges having an IR officer may be due to the information contained in the cover letter and the types of questionnaires used in the study.

In the first sample the initial cover letter did not indicate that colleges that did not have a person in charge of research were to return the questionnaire, whereas the second sample's cover letter contained a paragraph for these colleges. Also, the first questionnaire

requested the perceptions of the persons engaged in research in community junior colleges. They were to supply the skills and areas of knowledge that they used. The form was not long nor was there much time involved in filling it out. The final questionnaire was much longer and more time consuming. It required the person engaged in research to check the appropriate scale value which corresponded to the frequency with which each of the ninety-six competencies was used.

These types of questionnaires may also have influenced the type of researcher who responded to each one. The number of fulltime and parttime researchers whose primary responsibility was research did not vary in number from one sample to the other as much as the parttime researchers who had primary responsibilities other than research. The number of fulltime researchers increased by three; the number of parttime researchers with research their primary responsibility decreased by five; and the number of part-time researchers with primary responsibilities other than research decreased by eleven.

Initial Questionnaire and Clarification Form

The first questionnaire that was used, because of its open-ended format, allowed the researcher to reveal what skills and areas of knowledge (s)he used without being influenced by the opinions, perceptions of the writer or related literature. This type of

questionnaire was useful for obtaining information that might not have been available otherwise. Unfortunately, these types of data were "difficult to tabulate and summarize due to the variety of different answers that [were] given by the respondents" (Rummel, 1958, p. 90). The writer attempted, by equating competencies and by using an additional form for clarification, to list as many specific competencies as are used by institutional researchers in community junior colleges. Other researchers using other populations, larger samples, longer open-ended competency ranking forms and other available literature could have additional specific competencies or fewer specific competencies.

The clarification form contained twenty-one general competency areas. Some of these areas were similar to the areas developed in Moss's study (1966). There were eight areas that were similar in both studies. They were: statistics, communication skills, review of literature, research design, peer group--human relations, developing the problem--evaluation of data, computer, and the various human characteristics.

Final Questionnaire

The problem that was investigated by this study was whether there was a common and/or basic set of competencies used by institutional researchers in community junior colleges. The hypotheses considered: researchers in publicly operated and independently operated colleges, researchers who were employed fulltime and

parttime, and researchers from different enrollment sized colleges. The analyses were based on whether each group within each category of researchers and their rank ordering of the ninety-six competencies in the final questionnaire were the same. The results indicated that there were no significant differences in any of the categories of researchers in the ranking of the ninety-six competencies. Therefore, it can be said that there is a common and/or basic set of competencies used by institutional researchers in community junior colleges.

Approximately the first third of the rank ordered competencies indicated that the institutional researcher used the following general categories most often and with a high degree of agreement; the ability to communicate with others orally as well as in written form, a working knowledge of their own college, and in general, community college education. It was not until after these areas that research or any type of statistical competency was indicated; rank 31, working knowledge of data analysis; rank 34, working knowledge of data processing; and rank 40, working knowledge of descriptive statistics. Halfway through the ranked list the skills and knowledge of research and statistics appear again. Based on the medians and interquartile ranges, research techniques and statistics are used once a month, once every six months, once a year, or are never used, and have a low degree of agreement. As the statistical area became more advanced, i. e. , multiple regression, the less likely it was to

be used. The frequency of use indicates that the institutional researchers are oriented toward the concepts of community colleges rather than the areas which would support their alleged function, that of assisting the decision-making process through research.

This study provided evidence as to why there are so few research reports written and accepted for publication. The institutional researcher does not use the skills and areas of knowledge of research and statistics that would lend themselves to better research, data analysis, data presentations, etc.

Conclusions

The term competency was defined as being a skill or area of knowledge used by the individual researchers in his (her) particular situation. His (Her) interpretation of competency may have been different from some one else's. But all responses included on the initial questionnaire and clarification form were considered to be competencies.

The final list of competencies that the researchers indicated they used during the performance of their job would indicate that the particular competency is needed in a program designed to prepare personnel for conducting IR in the community junior college. But because these researchers' responses could be assumed to be the responses of the researchers who fail to get research reports published, the emphasis in the training program should not follow

the emphasis which could be assumed by the order of the ranked competencies. It would be suggested that the areas of research and statistics be emphasized more in the program to help ensure that the researchers when employed will use and thus publish their reports.

It could be hypothesized that the position the competencies were in was reflected in the results. In other words the competencies on community college education and one's own community college were ranked high because they were on the first page of the final questionnaire and that the statistics competencies were ranked low because they were on the last page. This hypothesis is not substantiated in this study. Competencies listed 93, 89, 95, 96, 90, and 91 and 95, were ranked 21.5, 24, 26.5, 30, 33, 37 and 38 respectively. Competencies that were listed 32, 33, 34, and 35 were ranked 91, 89, 79, and 90 respectively.

The general areas under which the ninety-six competencies could be categorized are similar to those presented by other studies on institutional researchers (Table 2). The only areas that were not included in the ninety-six competencies specifically were: psychology, teaching experience, higher education degree, educational research degree, and public finance. The other studies on educational researchers by Buswell et al. (1966), Moss (1966), Belcher (1972) and the program developed by Weirsmas (1969) were duplicated or substantiated by this study, as well as made more specific. The

work by Worthen et al. (1972) could not be duplicated due to time, cost, and personnel involved in the study. But there were some results which corresponded to the factors indicated by Worthen et al. (1972). The similarities are in the areas of: designing research studies and conducting and interpreting data analyses, conducting evaluations and constructing and using data collection instruments, and searching, reading, and reviewing the literature.

Recommendations for further investigation are:

1. determine who the "good" institutional researchers are,
- and 2. use institutional researchers from all types of institutions.

In response to the questions posed in Chapter 1 as to what kind of statistical background was needed for institutional researchers, what kinds of research design were used, what administrative experience was needed, and what did the researcher need to know about data processing, based on the data gathered in this study the following conclusions can be made.

1. Statistical background should include a working knowledge and computational skill in; descriptive statistics, correlation, chi-square, t-test, analysis of variance, analysis of covariance, linear regression, multiple regression, and non-parametric statistics,

2. research designs should include; experimental, quasi-experimental, ex post facto and the ability to develop designs for given situations,

3. an administrative background in leadership, delegation of authority and responsibility, and working with others,

and 4. for data processing, the researcher should be familiar with areas of sampling, instrument development and validation, computers, data sources, organization and presentation of results, etc.

It is recommended that the person intending to be employed as an institutional researcher in the community junior colleges should have an advance degree in educational research with a minor in higher education administration or vice versa as both areas are used in the performance for institutional research in community junior colleges.

APPENDICES

APPENDIX A

Dear Fellow Researcher:

I need your cooperation in this research study. The study seeks to answer the following problematic question:

Are there common and/or basic competencies, defined as skills and/or knowledge, that institutional researchers use in the performance of their job?

It is with your help that this question can be answered.

On the enclosed form please list and then rank, in order of importance, seven specific competencies that are important to your position as an institutional researcher. Do not list what you think are ideally important, but list those that you use in your research situation. Please be as specific as possible in your list and in ranking, e. g., do not list "research" but list the specific aspect of research used. Do not limit your listing to course work but include any competency, skill and/or knowledge, that you use in the performance of your job as a researcher.

A checklist of competencies was not included in this study as I am interested in your specific situation. You and some of your fellow researchers are developing the list of competencies so your response is needed.

The sample for this study was stratified according to the type of institution, public or independent, and the enrollment size. Some strata have only a few representatives. It is very important that I receive your reply as you may be in one of the smaller strata. You are representing many others like yourself in the population of institutional researchers in community junior colleges.

Thank you for your cooperation.

Sincerely,

Leslie Bielen
Project Director

Please respond to the following questions:

Are you employed fulltime as an institutional researcher?
If NO, is research your first responsibility?

APPENDIX B

DIRECTIONS:

Please rank seven competencies that you use in your specific area of research. Rank as number one the competency you use most often. Rank as number seven the competency you use the least (as related to the other seven). Please be as specific as possible.

<u>RANK</u>	<u>SPECIFIC COMPETENCY</u>
1.	_____
2.	_____
3.	_____
4.	_____
5.	_____
6.	_____
7.	_____

APPENDIX C

Dear Fellow Researcher:

Within the past few weeks you should have received a competency ranking form concerning institutional researchers. The letter that was enclosed with the form stated that the purpose of the study was to determine the specific competencies, defined as specific skills and/or knowledge, that institutional researchers use in the performance of their job.

The ranking form is unstructured since the study is designed to delineate the specific skills and/or specific areas of knowledge that you use in your particular college situation.

Since the population was stratified your reply is necessary in order to maintain the representatives of the sample.

Will you please answer the questions on this letter and fill in the competency ranking form with those competencies you use most often as an institutional researcher?

If there is no one designated as the institutional researcher for your college, would you please indicate this by returning the form using the return envelope that has been provided.

Your cooperation and attention will be appreciated.

Sincerely,

Leslie Bielen
Project Director

Enclosure:

Please answer the following questions:

Are you employed fulltime as an institutional researcher?
If NO, is research your first responsibility?

APPENDIX D

Dear Fellow Researcher:

Thank you for completing the competency ranking form that was sent to you last month. From the forms that you and your fellow researchers returned a composite list of competencies has been developed.

As stated, the purpose of this study is to determine common and/or basic competencies that institutional researchers in community junior colleges use in the performance of their jobs. The competency ranking requested that you rank order seven specific competencies that you use most often as an institutional researcher. Some of the competencies that are on the composite list are specific, e.g. experimental design; some of the competencies are not specific, e.g., statistics. The term statistics can be broken down into several aspects; types of statistics used, need for computational skills, knowledge of types of statistics, etc. There are several other competencies on the composite list that need further clarification. With your assistance this can be accomplished by responding to the enclosed form.

The enclosed form is a list of the general competencies that you helped to develop. This is not the complete composite list. I am still interested in your specific situation. Therefore, on the enclosed form please list the specific competencies that you use for each general competency that you use as an institutional researcher. Do not list what you think are "ideal" specific competencies.

As you assisted in the creation of these general competencies your assistance is needed in clarifying the various levels of the competencies so that the final list of general and specific competencies reflects your particular situation as an institutional researcher.

Please fill out the enclosed form and return within two (2) weeks.

Your cooperation and attention will be appreciated.

Sincerely,

Leslie Bielen
Project Director

Enclosure:

APPENDIX E

FOR EACH GENERAL COMPETENCY THAT YOU USE AS AN INSTITUTIONAL RESEARCHER, PLEASE LIST THE SPECIFIC SKILL OR SKILLS USED, AND/OR THE SPECIFIC AREA OR AREAS OF KNOWLEDGE NEEDED. DO NOT LIST WHAT YOU THINK ARE "IDEAL" SPECIFIC COMPETENCIES.

EXAMPLE:

COMPUTERS: skills: setting up canned programs, programming
(Fortran, PL/1)
knowledge: capabilities, limitations, locale, cost

GENERAL COMPETENCY: skill and/or knowledge needed in order to
complete a specific activity.

COMMUNITY COLLEGE EDUCATION

OWN INSTITUTION

COMMUNITY

COMPUTER

RESEARCH METHODOLOGY

RESEARCH DESIGN

DATA GATHERING (COLLECTION)

DATA PROCESSING

DATA ANALYSIS

STATISTICS

INSTRUMENT DEVELOPMENT

APPENDIX E (Continued)

ORGANIZATION - COORDINATION OF IR OFFICE

COMMUNICATION SKILLS

A. ORAL

B. WRITTEN

C. WITH PEOPLE

REVIEW OF LITERATURE

ADMINISTRATIVE ABILITY

PLANNING

SYSTEMS ANALYSIS

MANAGEMENT TECHNIQUES

EVALUATION OF DATA - RELATIONSHIPS, INSIGHT, USEFULNESS

HUMAN RELATIONS

PERSONAL CHARACTERISTICS

APPENDIX F

Dear Fellow Researcher:

I need your cooperation in this research study. The study seeks to answer the following problematic question:

Are there common and/or basic competencies, defined as skills and/or knowledge, that institutional researchers use in the performance of their job?

It is with your help that this question can be answered.

On the enclosed form you will find a list of specific competencies that have been provided by your fellow researchers around the country. I would appreciate it very much if you would take the time to review the list and check the appropriate box as to how often you use each competency.

If there is no one designated as an institutional researcher for your college, would you please indicate this by returning the form in the envelope that has been provided. Your response is as vital to the study as those colleges with institutional research offices.

The sample of the study was stratified according to the type of institution; public and independent, and the enrollment size. Some strata have only a few representatives. It is very important that I receive your reply as you may be in one of the smaller strata. You are representing many others like yourself in the population of institutional researchers in community junior colleges.

Please fill out the enclosed form and return it within two (2) weeks.

Your cooperation and attention will be appreciated.

Sincerely,

Leslie Bielen
Project Director

Enclosures

APPENDIX G

Use this key in terms of how often you use each competency as an institutional researcher:

KEY

- 1 = Never use the competency
- 2 = Use the competency once a year
- 3 = Use the competency once every six (6) months
- 4 = Use the competency once a month
- 5 = Use the competency once every other week
- 6 = Use the competency once a week
- 7 = Use the competency almost daily

APPENDIX H

Please respond to the following questions:

Are you employed fulltime as an institutional researcher? Yes No

If NO, is research your primary responsibility? Yes No

On this page and the following pages are the competencies that were provided by your fellow researchers. Enclosed, on a separate piece of paper, is the key for the checklist of competencies. There is no specific order for the manner in which the competencies are listed. PLEASE check (✓) the box which corresponds to how often you use each competency on the list. Be sure that you consider each competency in terms of your position as an institutional researcher only.

COMPETENCY

	1	2	3	4	5	6	7
General knowledge of community college education _____							
General knowledge of community college curriculum _____							
General knowledge of community college instruction _____							
General knowledge of community college students _____							
General knowledge of community college philosophy _____							
Working knowledge of own college's philosophy _____							
Working knowledge of own college's goals _____							
Skill in making own college's objectives measurable _____							

APPENDIX H (Continued)

COMPETENCY	1	2	3	4	5	6	7
Working knowledge of own college's structure _____							
Working knowledge of own college's policies _____							
Working knowledge of own college's procedures _____							
Working knowledge of own college's needs, "hot issues" _____							
Working knowledge of own college's faculty _____							
Working knowledge of own college's students _____							
Working knowledge of own college's curriculum _____							
Working knowledge of local geographic area _____							
Working knowledge of political situations local _____							
state _____							
national _____							
Working knowledge of socio-economic structure of community _____							
Working knowledge of local population _____							
Working knowledge of community attitudes toward college _____							
Working knowledge of community labor conditions _____							
Working knowledge of local agencies and their functions _____							
Ability to delegate responsibility _____							

APPENDIX H (Continued)

COMPETENCY	1	2	3	4	5	6	7
Ability to delegate authority _____							
Working knowledge in dealing with grants _____							
Working knowledge of facilities planning _____							
Ability to forecast, project: student enrollment _____							
economic features of community _____							
Working knowledge of planning techniques; flow charts _____							
Working knowledge of PERT _____							
Working knowledge of MBO _____							
Working knowledge of MIS _____							
Working knowledge of PPBES, PPBS _____							
Ability to communicate with others; administrators, faculty, community groups _____							
Skill in obtaining cooperation and support _____							
Skill in being a consultant within the college in a variety of areas of study _____							
Ability to present information to others logically _____							
Ability to see data capabilities _____							
Ability to interpret data and results of the data _____							
Ability to carry through a task; persistence _____							
Ability to remain objective _____							
Ability to communicate orally in laymen's terms _____							

APPENDIX H (Continued)

COMPETENCY

1 2 3 4 5 6 7

Ability to rephrase an answer for clarification _____

Ability to communicate in written form, clear, concise, organized and in laymen's terms _____

Working knowledge of research methodology and procedures

data processing _____

data analysis _____

data gathering _____

Working knowledge of research design experimental design _____

quasi-experimental designs _____

ex post facto designs _____

Ability to design research for specific situations; evaluation procedures _____

Ability to develop instruments for collecting data: _____

surveys for mail and telephone _____

questionnaires _____

conduct interviews _____

Working knowledge of sampling techniques _____

Ability to conduct sampling procedures _____

Knowledge of data sources within college _____

outside of college _____

APPENDIX H (Continued)

COMPETENCY	1	2	3	4	5	6	7
Working knowledge of measurement techniques: reliability, validity _____							
Working knowledge of computer capabilities; limitations _____							
Working knowledge of computer applications _____							
Working knowledge, skill in computer programming _____							
Skill in computer packages (SPSS, BiMed) _____							
Knowledge of who and where to obtain computer assistance _____							
Working knowledge of machines (calculators, keypunch machine, card sorters) _____							
Working knowledge of descriptive statistics: Central tendency (mode, median, mean) Variation (range, standard deviation, percentile range) _____							
Computational skill in descriptive statistics _____							
Working knowledge of graphs and charts _____							
Working knowledge of correlation _____							
Computational skill in correlation _____							
Working knowledge of t-test _____							
Computational skill in t-test _____							
Working knowledge of chi-square _____							
Computational skill in chi-square _____							
Working knowledge of analysis of variance _____							
Computational skill in analysis of variance _____							

APPENDIX H (Continued)

COMPETENCY	1	2	3	4	5	6	7
Working knowledge of linear regression _____							
Computational skill in linear regression _____							
Working knowledge of multiple regression _____							
Computational skill in multiple regression _____							
Working knowledge of analysis of covariance _____							
Computational skill in analysis of covariance _____							
Working knowledge of non-parametric statistics _____							
Computational skill of non-parametric statistics _____							
Working knowledge of scaling techniques _____							
Ability to organize office efficiently _____							
Ability to organize, coordinate studies _____							
Ability to organize research data for: analysis _____							
presentation in reports _____							
Leadership ability _____							
Ability to remain flexible _____							
Ability to make decisions based on data _____							
Ability to disseminate results _____							

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BIOGRAPHICAL SKETCH

Leslie DeReus Bielen was born May 11, 1946. She grew up in Ilion, New York and graduated from Ilion Central High School in June, 1964. She attended Ohio Wesleyan University for two and a half years and graduated from New York University in February, 1969 with a Bachelor of Arts degree with a major in psychology.

In April, 1969 she was employed by Western Electric Company, Kearney, New Jersey, as a psychometrist and assistant to the Industrial Psychologist. She was promoted to Employment Interviewer prior to her entrance in graduate school at the University of Florida in September, 1970. She received her master's degree in Educational Research in August, 1971 and began her doctorate program immediately thereafter. During her graduate program she worked as a graduate research assistant and teaching assistant.

Leslie DeReus Bielen is a member of the Association for Institutional Researchers, American Educational Research Association, and National Council on Measurement in Education.

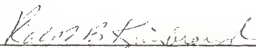
She is married to Alan V. Bielen and they have no children.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



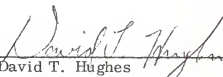
William B. Ware, Chairman
Associate Professor of Education

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Ralph B. Kimbrough
Professor of Education

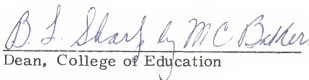
I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



David T. Hughes
Assistant Professor of Statistics

This dissertation was submitted to the Graduate Faculty of the College of Education and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August, 1974



Dean, College of Education

Dean, Graduate School